(A) For an energy or water efficiency standard, the sample mean is equal to or greater than the lower control limit, or

(B) For an energy or water consumption standard, the sample mean is equal to or less than the upper control limit.

APPENDIX C TO SUBPART C OF PART 429—SAMPLING PLAN FOR ENFORCEMENT TESTING OF DISTRIBUTION TRANSFORMERS

(a) When testing distribution transformers, the number of units in the sample (m_1) shall be in accordance with §429.47(a) and DOE shall perform the following number of tests:

(1) If DOE tests four or more units, it will test each unit once;

(2) If DOE tests two or three units, it will test each unit twice; or

(3) If DOE tests one unit, it will test that unit four times.

(b) DOE shall determine compliance as follows:

(1) Compute the mean (X_1) of the measured energy performance of the n_1 tests in the first sample as follows:

$$X_1 = \frac{1}{n_1}\sum_{i=1}^{n_1} X_i \qquad [1]$$

where X_i is the measured efficiency of test i.

(2) Compute the sample standard deviation (S_1) of the measured efficiency of the n_1 tests in the first sample as follows:

$$S_1 = \sqrt{\sum_{i=1}^{n_1} \frac{(X_i - X_1)^2}{n_1 - 1}} \qquad [2]$$

(3) Compute the standard error ($SE(X_1)$) of the mean efficiency of the first sample as follows:

$$SE(X_1) = \frac{S_1}{\sqrt{n_1}} \qquad [3]$$

(4) Compute the sample size discount ($SSD(m_1)$) as follows:

$$SSD(m_1) = \frac{100}{1 + \left(1 + \frac{0.08}{\sqrt{m_1}}\right)\left(\frac{100}{RE} - 1\right)} \qquad [4]$$

where m_1 is the number of units in the sample, and RE is the applicable DOE efficiency when the test is to determine compliance with the applicable energy conservation standard, or is the labeled efficiency when the test is to determine compliance with the labeled efficiency value.

(5) Compute the lower control limit (LCL_1) for the mean of

$$LCL_1 = SSD(m_1) - tSE(\bar{X}_1) \quad [5]$$

Where t is statistic based on a 97.5 percent one-tailed t test with degrees of freedom (from Appendix A) $n_1 - 1$.

(6) Compare the mean of the first sample (X_1) with the lower control limit (LCL_1) to determine one of the following:

(i) If the mean of the first sample is below the lower control limit, then the basic model is not compliant and testing is at an end.

(ii) If the mean is equal to or greater than the lower control limit, no final determination of compliance or noncompliance can be made; proceed to Step (7).

(7) Determine the recommended sample size (n) as follows:

$$n = \left[\frac{tS_1(108 - 0.08RE)}{RE(8 - 0.08RE)}\right]^2 \quad [6]$$

Given the value of n, determine one of the following:

(i) If the value of n is less than or equal to n_1 and if the mean energy efficiency of the first sample (X_1) is equal to or greater than the lower control limit (LCL_1), the basic model is in compliance and testing is at an end.

(ii) If the value of n is greater than n_1, the basic model is not compliant. The size of a second sample n_2 is determined to be the smallest integer equal to or greater than the difference $n - n_1$. If the value of n_2 so calculated is greater than $21 - n_1$, set n_2 equal to $21 - n_1$.

(8) Compute the combined (X_2) mean of the measured energy performance of the n_1 and n_2 units of the combined first and second samples as follows:

$$\bar{X}_2 = \frac{1}{n_1 + n_2}\sum_{i=1}^{n_1+n_2} X_i \quad [7]$$

(9) Compute the standard error ($SE(X_2)$) of the mean full-load efficiency of the n_1 and n_2 units in the combined first and second samples as follows:

$$SE(\bar{X}_2) = \frac{S_1}{\sqrt{n_1 + n_2}} \quad [8]$$

(Note that S_1 is the value obtained above in (2).)

(10) Set the lower control limit (LCL_2) to,

$$LCL_2 = SSD(m_1) - tSE(\bar{X}_2) \quad [9]$$

where t has the value obtained in (5) and $SSD(m_1)$ is sample size discount determined in (4), and compare the combined sample mean (X_2) to the lower control limit (LCL_2) to determine one of the following:

(i) If the mean of the combined sample (X_2) is less than the lower control limit (LCL_2), the basic model is not compliant and testing is at an end.

(ii) If the mean of the combined sample (X_2) is equal to or greater than the lower control limit (LCL_2), the basic model is in compliance and testing is at an end.

[76 FR 12451, Mar. 7, 2011; 76 FR 24781, May 2, 2011]

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

Subpart A—General Provisions

Sec.
430.1 Purpose and scope.
430.2 Definitions.
430.3 Materials incorporated by reference.
430.4 Sources for information and guidance.

Subpart B—Test Procedures

430.21 Purpose and scope.
430.23 Test procedures for the measurement of energy and water consumption.
430.24 [Reserved]
430.25 Laboratory Accreditation Program.
430.27 Petitions for waiver and applications for interim waiver.

APPENDIX A TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF ELECTRIC REFRIGERATORS AND ELECTRIC REFRIGERATOR-FREEZERS

APPENDIX A1 TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF ELECTRIC REFRIGERATORS AND ELECTRIC REFRIGERATOR-FREEZERS

APPENDIX B TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF FREEZERS

APPENDIX B1 (ALTERNATIVE) TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF FREEZERS

APPENDIX C TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF DISHWASHERS

APPENDIX C1 TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF DISHWASHERS

APPENDIX D TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF CLOTHES DRYERS

APPENDIX D1 TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF CLOTHES DRYERS

APPENDIX E TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF WATER HEATERS

APPENDIX F TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF ROOM AIR CONDITIONERS

APPENDIX G TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF UNVENTED HOME HEATING EQUIPMENT

APPENDIX H TO SUBPART B OF PART 430 [RESERVED]

APPENDIX I TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF CONVENTIONAL RANGES, CONVENTIONAL COOKING TOPS, CONVENTIONAL OVENS, AND MICROWAVE OVENS

APPENDIX J1 TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF AUTOMATIC AND SEMI-AUTOMATIC CLOTHES WASHERS

APPENDIX J2 TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF AUTOMATIC AND SEMI-AUTOMATIC CLOTHES WASHERS

APPENDIXES K–L TO SUBPART B OF PART 430 [RESERVED]

APPENDIX M TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF CENTRAL AIR CONDITIONERS

APPENDIX N TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF FURNACES AND BOILERS

APPENDIX O TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF VENTED HOME HEATING EQUIPMENT

APPENDIX P TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF POOL HEATERS

APPENDIX Q TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF FLUORESCENT LAMP BALLASTS

APPENDIX Q1 TO SUBPART B OF PART 430—UNIFORM TEST METHOD FOR MEASURING THE ENERGY CONSUMPTION OF FLUORESCENT LAMP BALLASTS